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— GLOBAL NETWORK —
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CNC Cylindrical Grinders

GL5i SERIES

GL5Pi
GL5Ai



<https://www.jtekt.co.jp>

Information presented in this brochure is subject to change without prior notice.
Available machines or machines shown may vary depending on optional equipment or periodic design changes.
The export of products defined as restricted commodities (or technologies) under Japan's "Foreign Exchange and Foreign Trade Act" requires an export license issued by the Japanese Government. Furthermore, similar licenses may be required for re-transfer, re-sale or re-export of such products, therefore please do not fail to contact JTEKT in advance.
In order to observe laws and regulations and prevent inappropriate export, re-sale and relocation, JTEKT has equipped all of our NC machine tools with devices that detect relocation. If this device is activated, the machine will cease operation and will not restart until it has been checked by JTEKT. JTEKT may refuse to restart the machine should it be deemed that such an action would amount to the inappropriate export of a commodity or technology, or violate export regulations. In such a case, JTEKT will not be liable for any damages arising from the refusal to restart machine operation and do not bear any liability to perform services pertaining to product warranty.
Please contact your JTEKT representative for details. Always read manuals carefully before using any machinery to ensure safe and proper use.

Type of Machinery: Grinder
Model Number: GL5i

Optimum cylindrical grinder for production enabling both high accuracy and high productivity.

CNC Cylindrical Grinders

GL5Pi GL5Ai



This machine in this photo is GL5Pi-32.
The grinder in this photo has special specifications.
Note: Painting color shall be specified by mutual agreement.

Long-term grinding accuracy

- High rigidity - low vibration bed
- TOYODA STAT BEARING
- Reduction of thermal displacement

High Productivity

- Abundant variation
- Abundant grinding cycles
- All-step grinding due to being driving dog-free **Option**
- Improved productivity through adoption of a CBN wheel **Option**

Reassuring operation

- HMI TOYOPUC-Touch of the IoT* era
- High accuracy filtering coolant unit **Option**

Rather than "IoT", JTEKT utilizes "IoT" ("Internet of Everything"), in which people, objects, information, and services are interconnected.



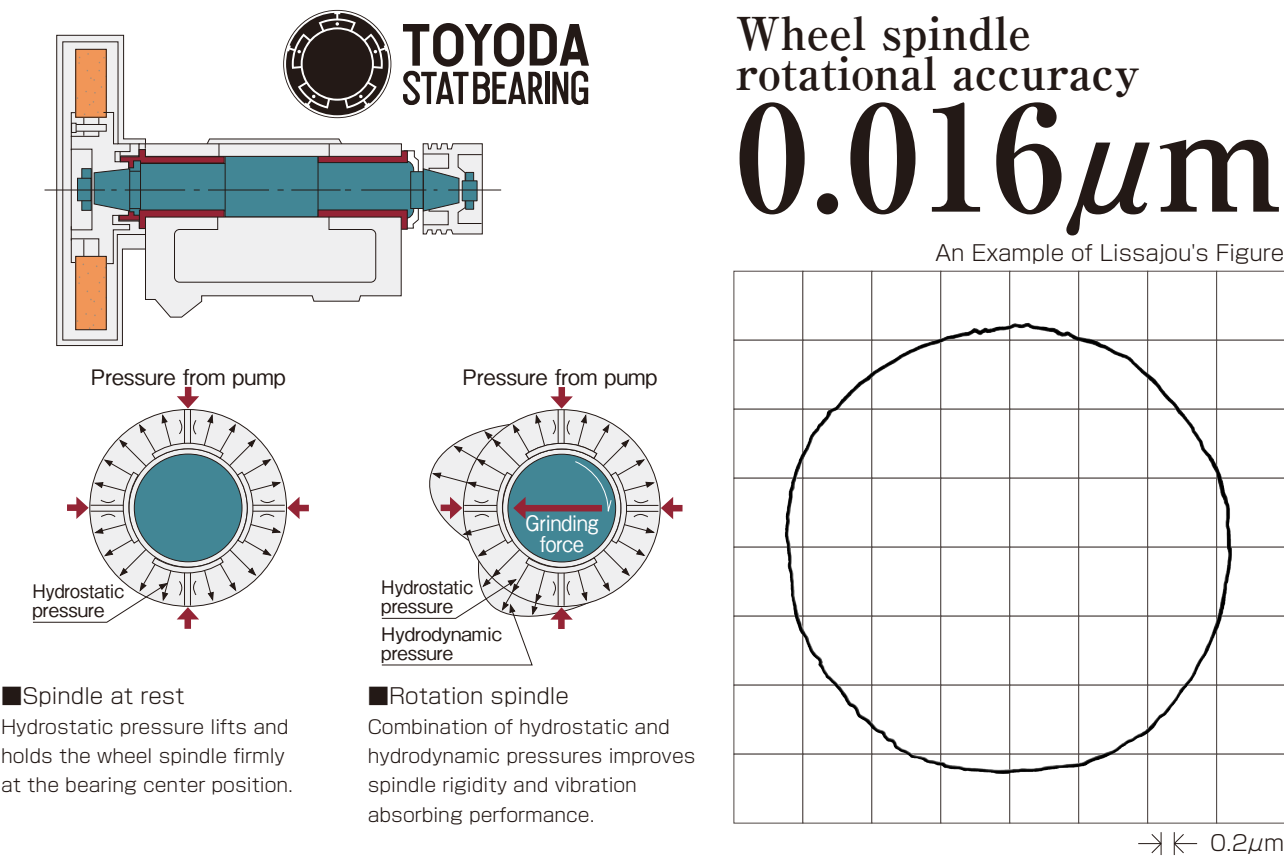
Photo is an example of CBN wheel specification.

Long-term grinding accuracy

High rotation accuracy and feed accuracy

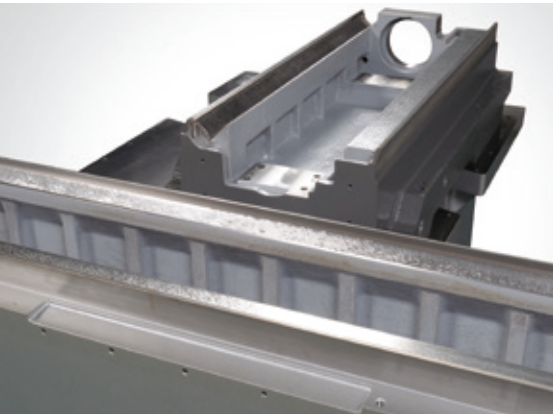
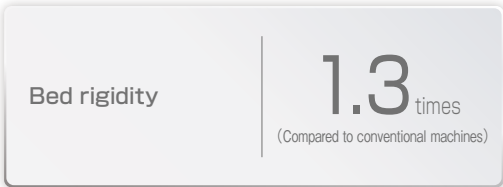
JTEKT's Proprietary TOYODA STAT BEARING

The heart of our wheel spindle is the TOYODA STAT BEARING. This bearing is uniquely designed as a hybrid bearing that combines static and dynamic pressure. Eliminating all metal-to-metal contact in the bearing reduces wear for machining longevity. It also features a highly rigid structure with excellent damping performance, which gives the spindle high rotational accuracy.



High rigidity, low-vibration bed

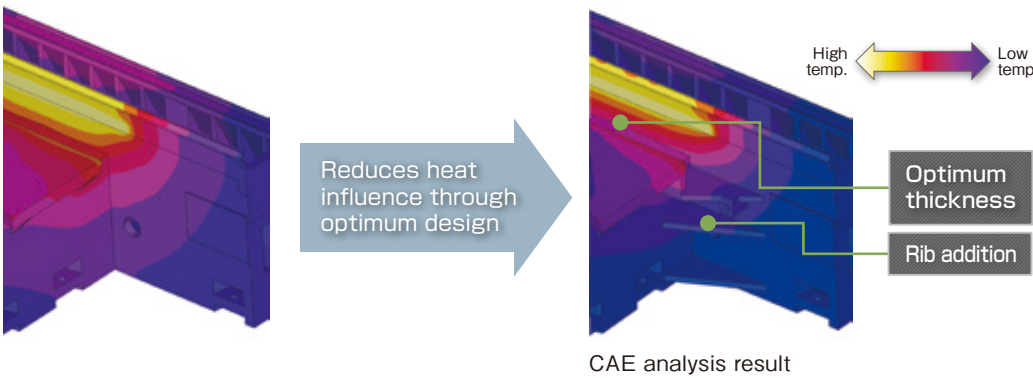
To achieve high-accuracy grinding over a prolonged period, the support bed has been designed and analyzed to provide sufficient rigidity and to suppress unnecessary vibration during grinding.



Reduction of thermal displacement

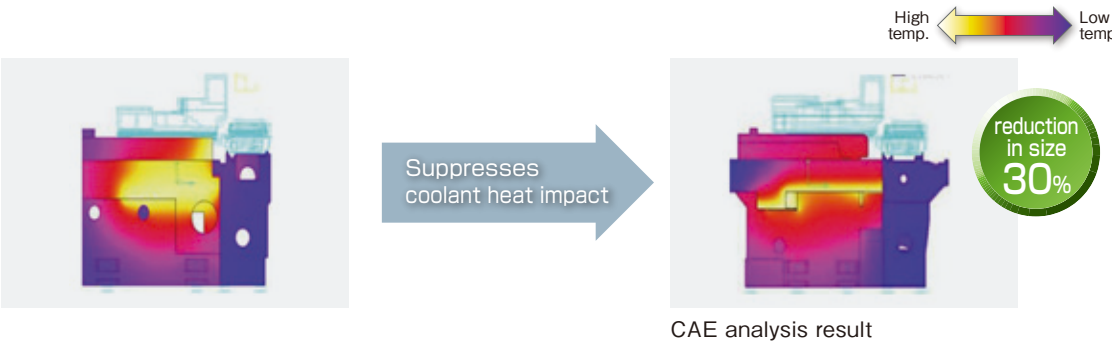
Low thermal displacement bed

Brings ingenuity to the bed shape and rib layout, and minimizes strain caused by room temperature, etc.



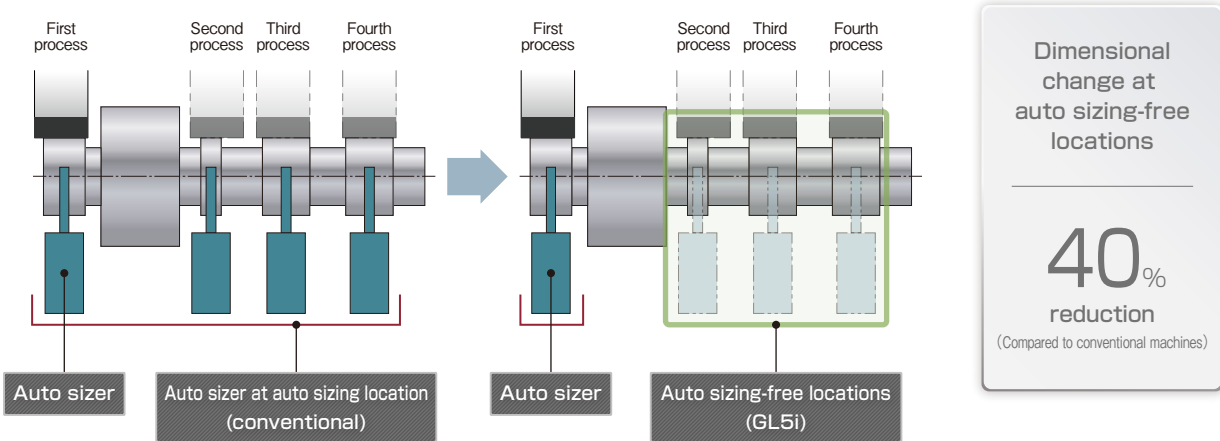
Heat isolation cover

Using CAE analysis, we have achieved a coolant route that is not easily affected by heat. By adding an isolation cover, a layer of air is created between the bed and the coolant route, which reduces the amount of heat that is transferred to the bed.



Achieved auto sizing-free by reducing heat displacement.

Dimensional accuracy of auto sizing-free locations was increased by reducing the heat displacement of the machine base.



High productivity

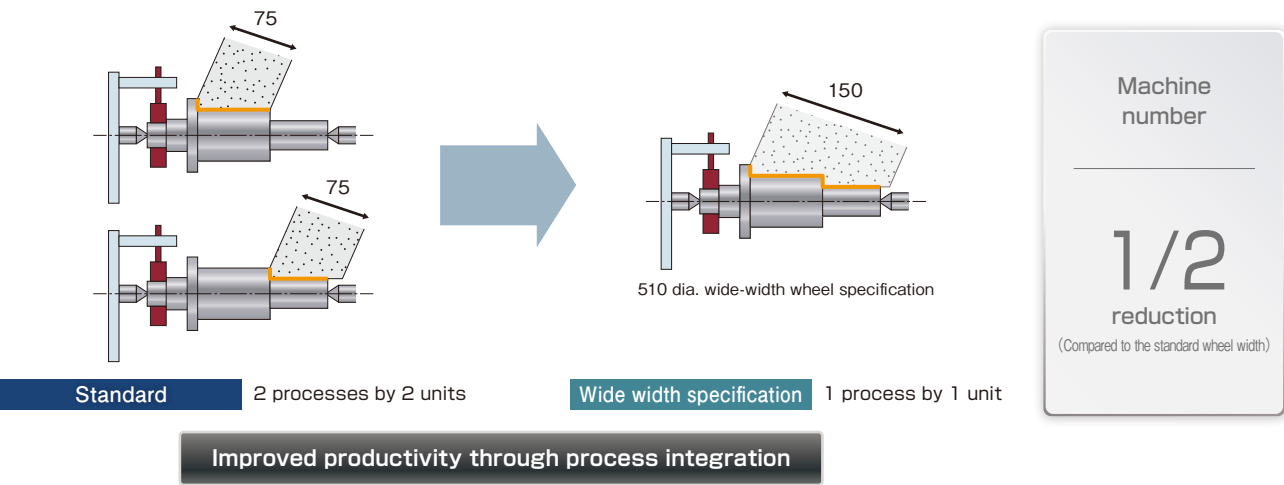
Abundant variation

Wheel	Wheelhead	Type	Wheel OD × max. width × ID (mm)	Swing on table (φ mm)	Distance between centers (mm)
Normal wheel	Straight	GL5Pi	φ510×125 [150] × φ203.2 (φ610×80 [125] × φ304.8)	φ320	320/630/1,000/1,500
	Angular	GL5Ai	φ510×125 [150] × φ203.2 (φ610×80 [125] × φ304.8)		
(CBN wheel)	Straight	GL5Pi	(φ350×50×φ180)		
	Angular	GL5Ai	(φ370×50×φ180)		

(): option []: wide width wheel specification

High efficiency grinding using wide-width wheel

Two conventional processes were integrated into one process by grinding with a wide-width wheel, reducing the the number of machines.



Abundant grinding cycles

From an abundance of grinding cycles incorporating JTEKT's thorough knowledge of grinding, we propose the ultimate grinding cycle to suit your workpiece. We have many more grinding cycles available apart from those shown below. Please consult with our sales staff for details.

	Plunge grinding	Multi-step plunge grinding	Multi-plunge/traverse grinding
Straight type			
Angular type			

Grinding example

Workpiece to be ground
[name] Armature shaft
[material] S48C

Workpiece to be ground
[name] EPS pinion shaft
[material] SCM420

Workpiece to be ground
[name] Blank shaft
[material] S48C

Workpiece to be ground
[name] Divided crank shaft
[material] S48C

Workpiece to be ground
[name] Gear
[material] SCr420

Workpiece to be ground
[name] Front hub
[material] S40VC

Workpiece to be ground
[name] Outer race
[material] S45CJ

Workpiece to be ground
[name] Camshaft
[material] S45C

Workpiece to be ground
[name] CVT shaft
[material] SCM420H

Workpiece to be ground
[name] Drive shaft
[material] SCM415

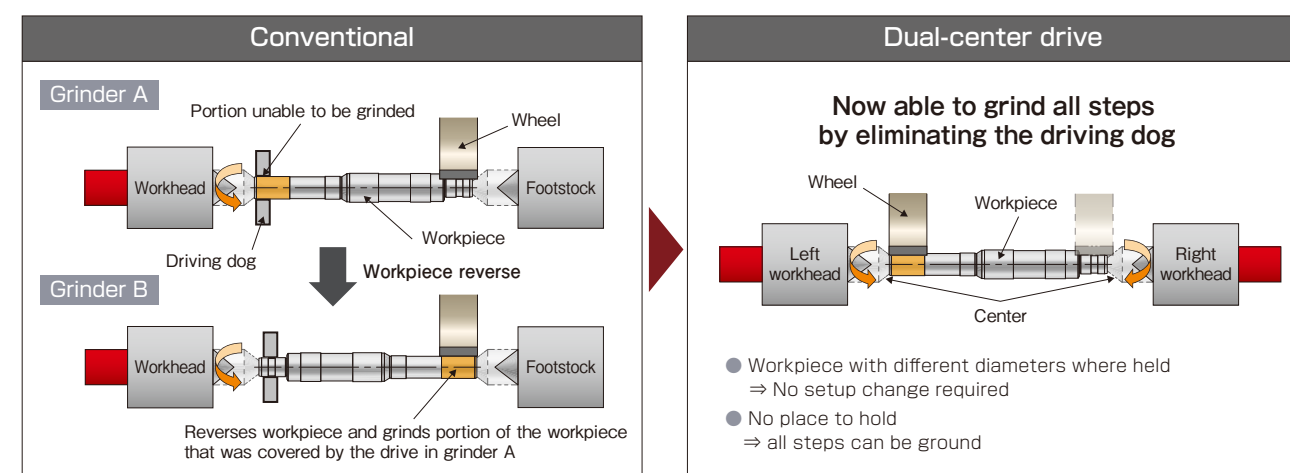
High productivity

Improved productivity with a dual-center drive

Able to grind all steps by eliminating the driving dog

Option

We have prepared a dual-center drive workhead that drives workpieces using the friction force of both centers. With this device, all-step grinding of outside diameters is possible without a driving dog.

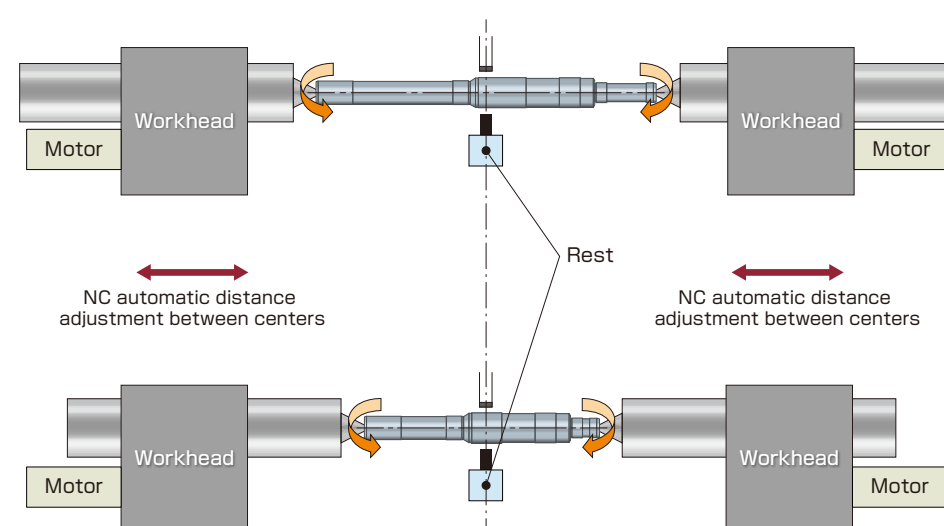


Improved productivity without performing setup changeover

Supporting varying workpiece lengths with a function for NC auto distance between-center adjustment.

Option

Supporting varying workpiece lengths without changing the rest position. This significantly reduces set-up changeover time, contributing to productivity improvement.



Productivity improved with the adoption of a CBN wheel

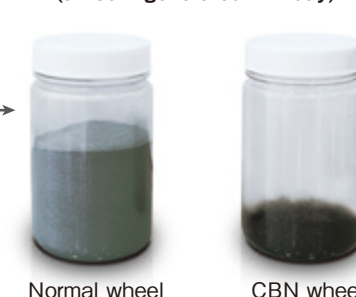
Merits of CBN wheel usage

Option

By adopting a CBN wheel, maintenance and workability are improved.

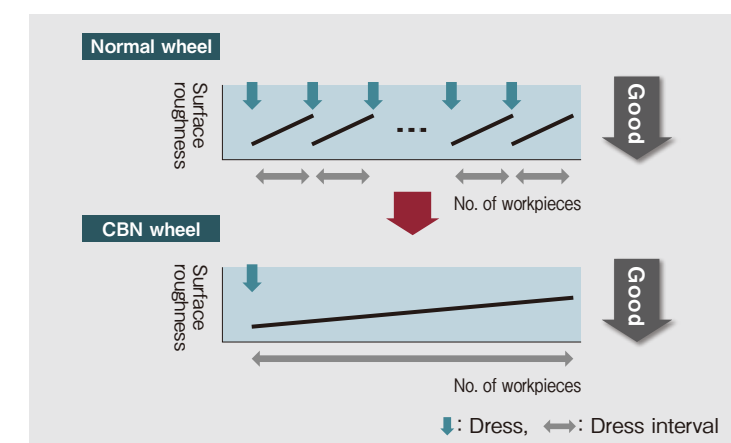
- Reduction of wheel dressing wait time
- Reduction of wheel change frequency
- Less quality check processes associated with wheel diameter change
- Less coolant tank maintenance processes caused by grain infiltration

Comparison of abrasive amount (amount generated in 1 day)



Accuracy improved with the adoption of a CBN wheel

Dimensional accuracy and surface roughness is stabilized due to an extended dressing (wheel dressing) interval.



Wheel surface speed options are 45 m/s, 60 m/s and 80 m/s

With the surface speed of 45 m/s, the benefits of adopting a CBN wheel are obtained at the same equipment cost as a normal wheel. The surface speeds of 60 m/s or 80 m/s achieve further shortening of cycle time.

Equipment cost for the CBN wheel
Wheel surface speed 45 m/s:
Example of transmission application

35%*
reduction
(Compared to conventional machines)

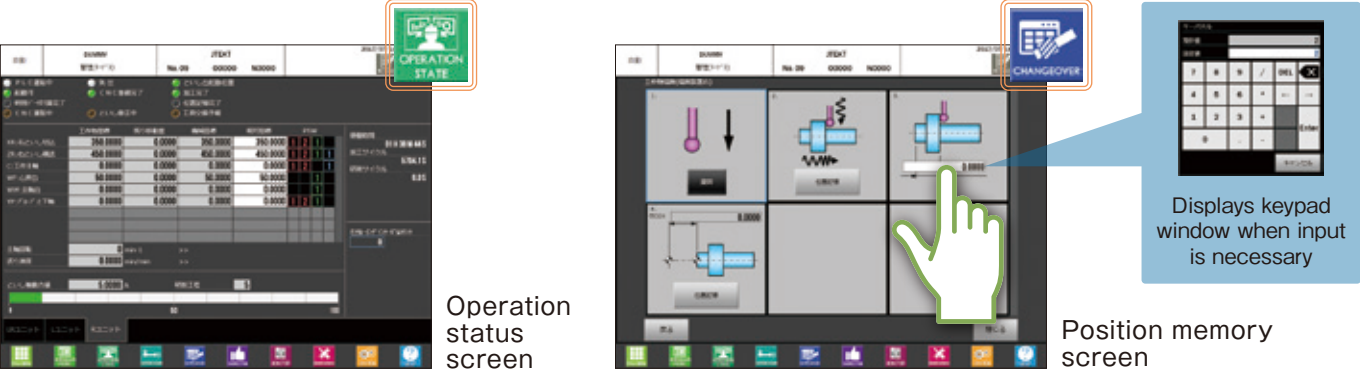
*The data listed does not show guaranteed figures.



Renewed operability

Visible and effective operation thanks to batch data display

A 25% larger display has made it possible to concentrate information on one screen and display the required key panel when necessary



Realization of simple operation

Assists work during setting of workpiece data

Workpiece data can be edited with a grinding cycle diagram display



Manual display on the operation panel

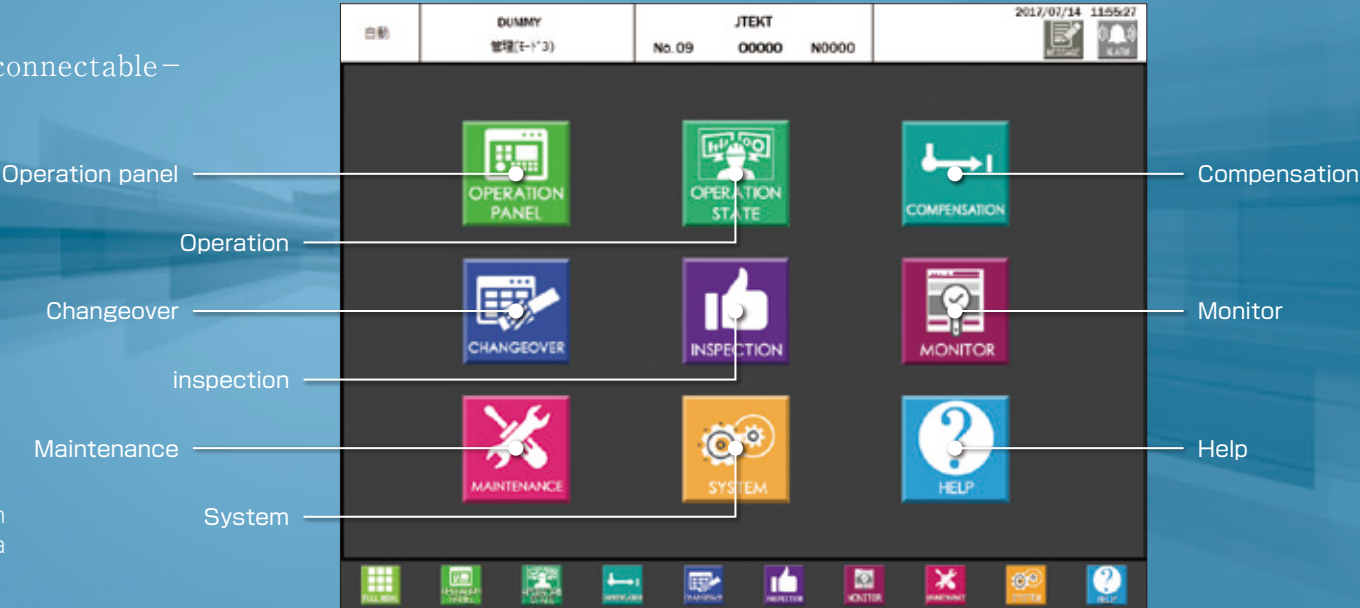
The manual can be read on the operation screen and a key word search function makes it possible to extract the target information



HMI in the IoE era –Simple, safe and connectable–
TOYOPUC-Touch



Minimized frequency of screen calling operations
Iconized menu enables screen calling from any screen in a maximum of two operations



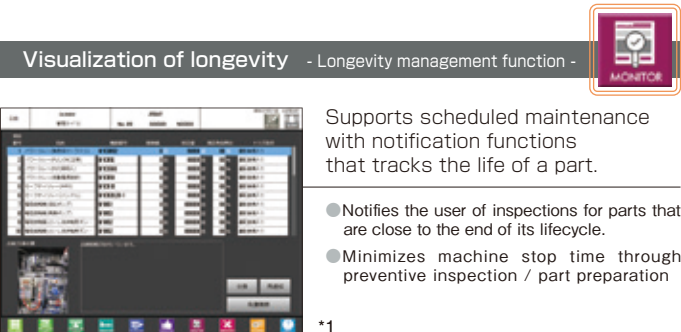
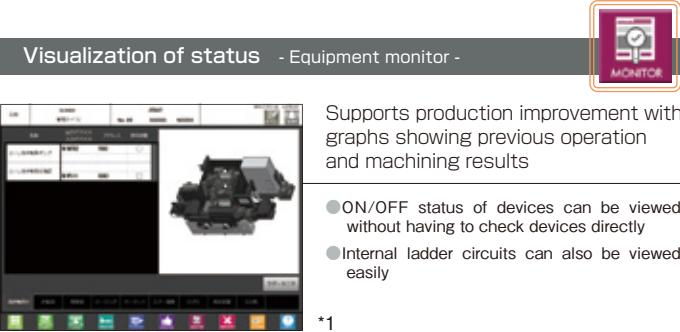
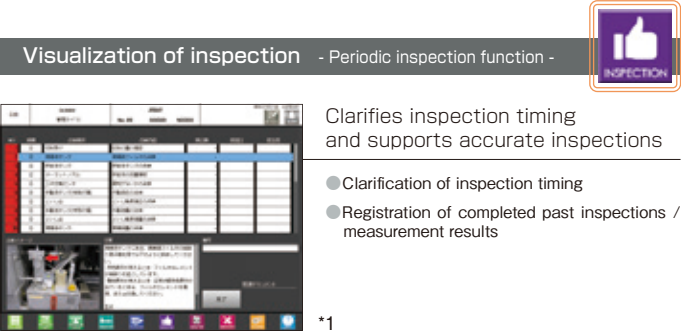
Realization of simple operation

Screen swiping and pinching in/out mimics the operability of a smart phone, making the TOYOPUC-Touch easy to use and easy to learn



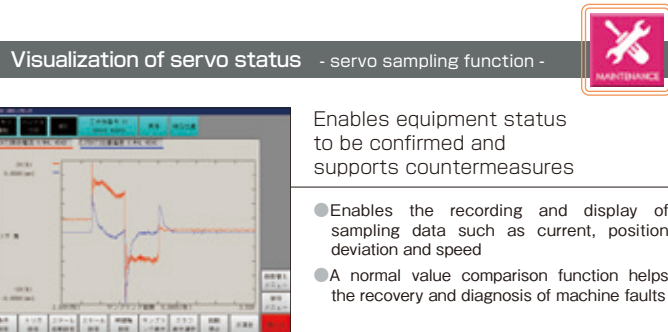
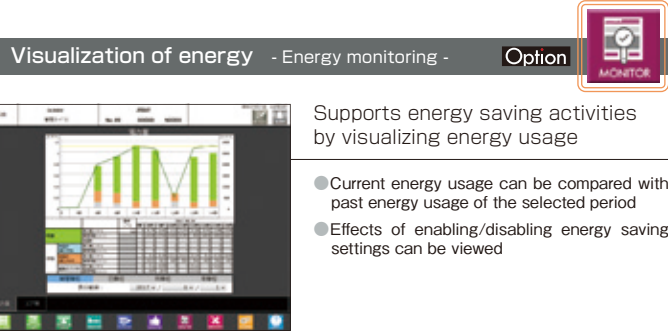
Visualization of equipment status

Supports operations performed at customer work sites with functions that visualize equipment status



Visualization of energy

Supports energy saving activities by visualizing energy usage



Rapid support in remote operation

Accurate support reducing fault recovery time

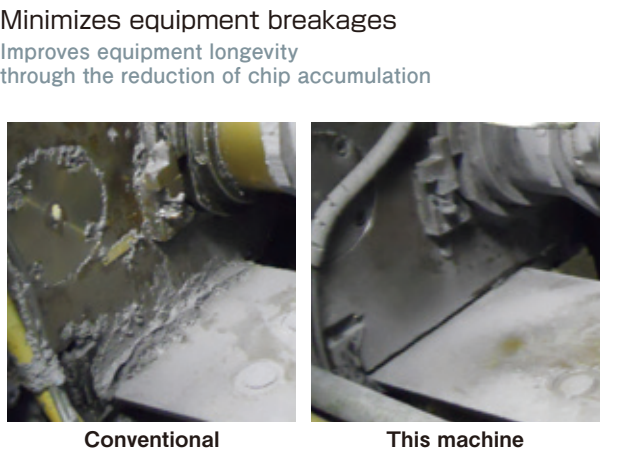
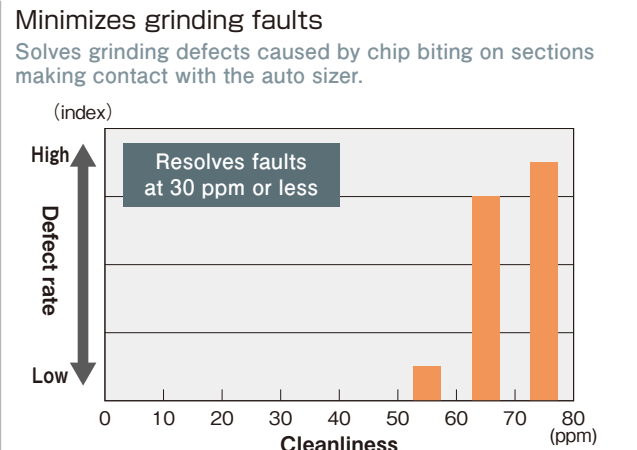


*1: A production machine-support screen is available as an option.

Reassuring operation

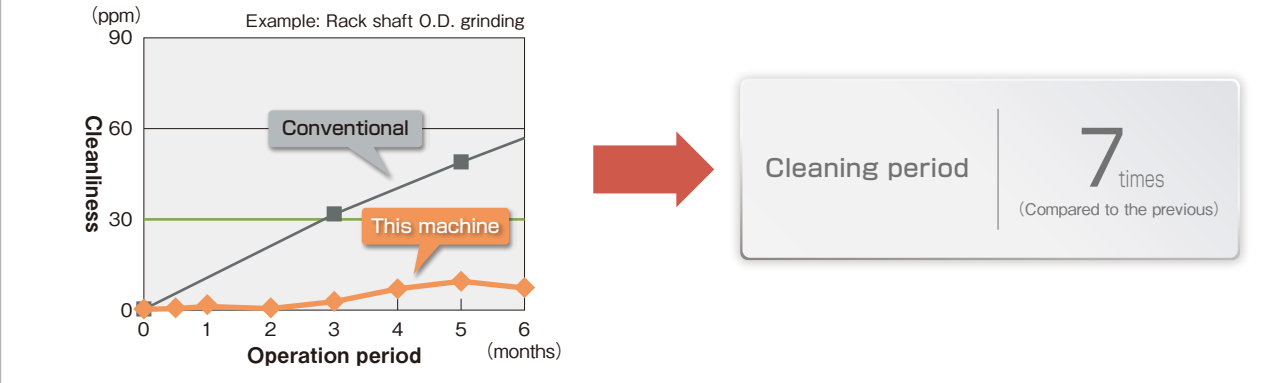
Minimizing grinding faults and equipment breakage through high accuracy filtering at 30 ppm

Option



Longer interval between coolant replacement in the coolant tank

Cleanliness is improved and liquid replacement interval is extended.



Machine specifications

() : option < > : wheel surface speed 120m/s specification [] : wide width wheel specification

Item		Unit	GL5Pi-32	GL5Pi-63	GL5Pi-100	GL5Pi-150	GL5Ai-32	GL5Ai-63	GL5Ai-100	GL5Ai-150
Distance between centers		mm	320	630	1,000	1,500	320	630	1,000	1,500
Swing over table		mm	φ320							
Grinding diameter		mm	φ0~220							
Load between centers		kg	150							
Control unit			TOYOPUC-GC70							
Wheel	Normal wheel Specifications OD × width (max.) × ID	mm	φ510×125 [150] × φ203.2 (φ610×80 [125] × φ304.8)				φ510×125 [150] × φ203.2 (φ610×80 [125] × φ304.8)			
	CBN wheel Specifications OD × width (max.) × ID	mm	(φ350×50×φ180) <φ350×30×φ25>				(φ370×50×φ180)			
	Normal wheel Specifications Wheel surface speed	m/s	45 (60) [45, 60]							
	CBN wheel Specifications Wheel surface speed	m/s	(45, 60, 80) <120>				(45, 60, 80)			
Wheelhead	Rapid feedrate	m/min	φ20							
	Minimum input increment	mm	φ0.0001							
Table	Type		United type							
	Rapid feedrate	m/min	20		15		20		15	
	Minimum input increment	mm	0.0001							
Workhead			Fixed axis							
	Center		MT. No. 4 (No.5)							
	Rotation speed	min ⁻¹	22~500							
Footstock			Hydraulic type with manual taper adjustment							
	Center		MT. No. 4 (No.5)							
	Footstock stroke	mm	60							
Electric unit	Wheel spindle	kW	5.5 (7.5) <15> [11]							
	Wheelhead feed	kW	1.3							
	Table traverse feed	kW	1.8							
	Work spindle	kW	1.3							
	Hydraulic oil pump	kW	0.75							
	Lubrication oil pump	kW	0.04							
	Wheel spindle bearing oil pump	kW	0.25 <2.2> [1.5]							
Tank capacity	Hydraulic oil	L	10							
	Lubrication oil	L	12							
	Wheel spindle bearing oil	L	17 <80> [45]							
	Coolant	L	230							
Machine weight		kg	4,500	5,000	6,500	8,000	4,500	5,000	6,500	8,000

* The above values may be limited by the equipped accessories and tooling.

TOYOPUC-GC70 CNC specifications

●: Standard □: Optional

Item	No.	Specification	Accessories
Controlled axes	1	X axis (wheelhead feed)	●
	2	Z axis (table feed)	●
	3	Multi axes specification	□
HMI	4	TOYOPUC-Touch	●
Display unit	5	12 inch color TFT	●
File management	6	Structured data management	●
	7	Maximum of 64 grinding data	●
Coordinate setting	8	Process data/each workpiece: 30	●
	9	Position memory (various type)	●
Compensation function	10	Each step dimension compensation	●
Display	11	Operation monitor	●
	12	Sequence circuit monitor	●
	13	Sequence circuit edit	●
	14	Work procedure	●
	15	Inspection, Maintenance data	●
	16	Metric display	●
	17	Inch display	□
	18	Canned cycle	●
Operation	19	Test cycle	●

Item	No.	Specification	Accessories
Operation	20	Wheel dressing cycle	●
	21	Return cycle	●
	22	In-process startup function	●
	23	Single block	●
	24	Rapid feed override	●
	25	Feed override	●
Auto sizing	26	Grinding step skip	●
	27	Autosizer control section	□
Maintenance	28	Wheel replacement prediction/min.wheel dia. display	●
	29	Self-diagnosis function	●
	30	Alarm history display	●
	31	Batch backup function	●
	32	Servo sampling function	●
Counter (display in the display screen)	33	Production counter	●
Cycle time display (display in the display screen)	34	Quality check counter	●
	35	Processing cycle time	●
Others	36	Grinding cycle time	●
	37	MDI on/off key switch	●
	38	USB flash drive I/F	●
	39	Wheelhead return at power failure	●

Package suitable for the customer's production system

●: Package standard accessory □: Optional accessory

Item		Unit name	A package (Both centers)	B package (Collet chuck)	C package (Both-center drive)
Main accessory	Workhead	Dead center spindle workhead (MT No. 4)	●	—	—
		Live center spindle workhead (MT No. 4)	—	●	—
		Live center spindle workhead (MT No. 4 with NC automatic quill locatin)	—	—	●
	Footstock	Hydraulic footstock with manual taper adjustment (MT No.4)	●	—	—
		Pusher unit	—	●	—
	Wheelhead	Wheel dia. φ510mm specification (normal wheel)	●	●	●
		Wheel surface speed 45m/s specification (normal wheel)	●	●	●
		Front guard manual adjustment type wheel guard (normal wheel)	●	●	●
	Hydraulic /pneumatic	Spindle bearing oil pump unit (wheelhead built-in type, with air cooler)	●	●	●
		Hydraulic oil pump unit (without no-oil detection device)	●	●	●
		Lubrication oil pump unit (with no-oil detection device)	●	●	●
		Pneumatic devices	●	●	●
	Coolant supply unit	Coolant supply unit (tank capacity: 230L, with magnetic separator, processing force: 80L/min)	●	●	●
		Bed washing unit (with washing pump)	●	●	●
	Wheel dresser	Wheel dresser for formed single diamond	●	●	●
	CNC unit	JTEKT-made CNC unit TOYOPUC-GC70	●	●	●
	Coolant splash prevention cover	Auto open/close type (with ceiling, with window, with confirmation of close)	●	●	●
	High-accuracy support	Table feed Z axis floating plate specification	●	●	●
Optional accessory	Footstock	Automatic center distance adjustable type footstock (MT No.4, NC method)	□	□	—
		Wheel dia. φ610mm specification (normal wheel)	□	□	□
	Wheelhead	Wheel dia. φ350/370mm specification (CBN wheel)	□	□	□
		Wheel surface speed 60m/s specification (normal wheel)	□	□	□
		Wheel surface speed 80m/s specification (CBN wheel)	□	□	□
		Wheel surface speed 120m/s specification (CBN wheel)	□	□	□
		Front guard automatic adjustment type wheel guard (normal wheel)	□	□	□
		Variable wheel surface speed unit (inverter control, 3-step switch)	□	□	□
	Hydraulic /pneumatic	Oil skimmer	□	□	□
	Coolant supply unit	High accuracy filtering coolant unit (30 ppm) (tank capacity: 410 L, with magnetic separator, processing force: 95 L/min)	□	□	□
		High accuracy specification coolant unit (5 ppm) (tank capacity: 370 L, with magnetic separator, processing force: 100 L/min)	□	□	□
		Coolant supply unit with paper filter (tank capacity: 250L, processing force: 80L/min)	□	□	□
	Wheel dresser	Wheel dresser for rotary diamond	□	□	□
		Truing unit (for CBN wheel)	□	□	□
	Tooling-related devices	Workpiece driving dog	□	□	—
		Automatic chuck	□	□	—
		Hydraulic rest unit (mounted on table)	□	□	□
		Auto sizer for single diameter (JTEKT-made, mounted on table)	□	□	□
		Auto sizer for single diameter (JTEKT-made, mounted on bed)	□	□	□
		Auto sizer automatically supporting diameter difference (JTEKT-made, mounted on bed)	□	□	□
		Automatic lateral locator	□	□	□

These may be limited by the equipped accessories and tooling.

●: Machine type applicable to package

Machine type	A package (Both centers)	B package (Collet chuck)	C package (Both-center drive)
GL5i-32	●	●	●
GL5i-63	●	●	●
GL5i-100	●	—	—
GL5i-150	●	—	—

Machine layout & dimensions

GL5i

Layout plan

(unit : mm)

GL5i-32 / GL5i-63

GL5i-100 / GL5i-150

The diagrams show the layout of the machine with dimensions labeled. For GL5i-32 / GL5i-63, dimensions A and B are the width between centers, C is the workable depth, D is the depth to the top of the wheelhead, E is the total depth, and F is the depth to the top of the footstock. For GL5i-100 / GL5i-150, dimension A is the width between centers, C is the workable depth, D is the depth to the top of the wheelhead, E is the total depth, and L is the depth to the top of the footstock.

The above is the layout for standard specifications.
The layout may be changed depending on the tooling and peripheral units.

Unit : mm								
Machine type	Distance between centers	A: width	B: width	C: Workable depth	D: Depth	E: Depth	F: Depth	Machine height
GL5i-32	320	2,530	3,100	465	3,050	3,517	—	1,890
GL5i-63	630	3,150	3,200	465	3,050	3,517	—	1,890
GL5i-100	1,000	3,980	—	465	3,050	3,517	450	1,872
GL5i-150	1,500	5,450	—	572	3,157	3,624	450	1,872

*1 The A values may be changed by each footstock spec..
*2 The B values may be changed by each footstock and coolant unit spec..

The machine in this image includes optional accessories.